ASSIGNMENT-1
MATH 111

BRANCH-BCA 1st YEAR

ROLL No-Iut-820-10720

NAME-PAPIYA DAS

1. What is the Probability that the total of two dice will be greater than 9, given that the first die is a 5 ?

Let X = first die is 5

Let B = total of two dice is greater than 9

$P(A) = \dfrac{1}{6}$

Possible Outcomes for A and B: $\{(5,5),(5,6)\}$

$P(A \text{ and } B) = \dfrac{2}{36} = \dfrac{1}{18}$

$P(B/A) = \dfrac{P(A \cap B)}{P(A)}$

$\qquad = \dfrac{1}{18} \times 6$

$\qquad = \dfrac{1}{3}$

2. A bag Contains red and blue marbles. Two marbles are drawn without Replacement. The Probability of Selecting a red marble and then a blue marble is 0.28. The Probability of Selecting a red marble on the first draw is 0.5. What is the Probability of selecting a blue marble on the second draw, given that the first marble drawn was red?

Let X be the event where red marble is selected on the first draw.

Let B be the event where blue marble is selected on the second draw.

Given,

$$P(A) = 0.5 \quad \text{or} \quad \tfrac{1}{2}$$

$$P(B) = 0.28 \quad \text{or} \quad \tfrac{28}{100}$$

$$= \tfrac{7}{25}$$

$$\therefore P(B/A) = \frac{P(A \cap B)}{P(A)}$$

$$P(B/A) = \frac{0.28}{0.5}$$

$$= \frac{28}{50}$$

$$= 0.56$$

3. Find the Probability of Selecting a black Card or a "6" from a deck of 52 Cards.

Total Outcomes = 52

favourable Outcomes = 26 Black + 2 Six of Hearts and Diamond = 28

So the Probability of selecting a black Card or a 6 from a deck of 52 Card is $= \frac{28}{52}$

$$= \frac{7}{13}$$

(4)

4. A box contains 4 chocobars and 4 ice creams. Tom eats 3 of them One after another. What is the Probability of sequentially choosing 2 chocobars and 1 Icecream?

Probability of choosing 1 chocobar

$$= \frac{4}{8} = \frac{1}{2}$$

After taking out 1 chocobar the total number is 7

Probability of choosing 2nd chocobar $= \frac{3}{7}$

Probability of choosing 1 ice cream out of a total of 6 $= \frac{4}{6} = \frac{2}{3}$

So the final Probability of choosing 2 chocobar and 1 Icecream $= \frac{1}{2} \times \frac{3}{7} \times \frac{2}{3}$

$$= \frac{6}{42}$$

$$= \frac{1}{7}$$

(P.T.O)

5. * Single coin is tossed 5 times. what is the Probability of getting at least one head?

A single coin is tossed five times if A, B, C, D, E denotes the number of getting tales in toss

So the Probability of gating one tail

$$= P(A \cap B \cap C \cap D \cap E)$$

$$= P(A) \cdot P(B) \cdot P(c) \cdot P(D) \cdot P(E)$$

$$= \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$$

$$= \frac{1}{32}$$

∴ Probability of getting atleast one head

$$= 1 - (\text{Probability of getting one tail})$$

$$= 1 - \frac{1}{32}$$

$$= \frac{31}{32}$$

6. A Pack Contains 4 blue, 2 red and 3 black Pens. If 2 Pens are drawn at random from the Pack, NOT replaced and then another pen is drawn. What is the Probability of drawing 2 blue pens and 1 black Pen ?

Total blue Pens = 4

Total Red Pens = 2

Total Black Pens = 3

Total Pens = 4 + 2 + 3

= 9

Probability of drawing 2 blue pens = $\dfrac{4c_2}{9c_2}$

$= \dfrac{4 \times 3}{9 \times 8}$

$= \dfrac{1}{6}$

After this the Pen are not replaced which reduces the no of pen in the packet to 7

(P.T.O)

So the Probability of drawing 1 black pen from Pack of 7 Pen is

$$\frac{3_{C_1}}{7_{C_1}}$$

$$= \frac{3}{7}$$

Probability of drawing 2 blue and 1 black Pen $= \frac{1}{6} \times \frac{3}{7}$

$$= \frac{3}{42}$$

$$= \frac{1}{14}$$

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